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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/506,382	02/18/2000	Kiyohide Sato	2355.11107	8555

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EXAMINER

YANG, RYAN R

ART UNIT

PAPER NUMBER

2672

DATE MAILED: 05/28/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/506,382

Applicant(s)

SATO ET AL

Examiner

Ryan R Yang

Art Unit

2672

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 6, 7, 9-14, 18 and 19 is/are rejected.
- 7) ☒ Claim(s) 4, 5, 8 and 15-17 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3. 6) ☐ Other:

DETAILED ACTION

1. Claims 1-19 are pending in this application. Claims 1, 9, 10, 14, 18 and 19 are independent claims. This action is non-final.

This application claims foreign priority dated 6/11/99.

2. The present title of the invention is "Marker Layout Method, Mixed Reality Apparatus, and Mixed Reality Space Image Generation Method".

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 6-7, 10-11 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Crane et al. (6,054,991).

As per claims 1-3, 6-7, 10-11 and 13, Crane et al., hereinafter Crane, disclose a marker layout method for laying out markers in a real space as position indices upon presenting a mixed reality space, comprising the step of:

laying out the markers to have a positional relationship that allows a given player not to observe markers to be used by only another player when a plurality of players who observe the mixed reality space within different movable ranges

observe the mixed reality space ("The graphical representation obscures the first and second objects according to the relative position of the first and second objects to a predetermined observation point within the virtual reality environment", column 2, line 10-14, where the objects are the marker).

5. As per claim 2, Crane demonstrated all the elements as applied to the rejected claim 1, supra, and further discloses a visible feature of the markers to be used by only the other player is similar to a visible feature of the markers used by the given player (Figure 2, since the different players share the same processor and memory, it is anticipated the marker used are similar).

6. As per claim 3, Crane demonstrated all the elements as applied to the rejected claim 1, supra, and further discloses the visible feature includes at least one of color, texture, shape, and size of the marker ("Each terminal (or leaf) node in the tree specified an object (typically an convex polyhedron) composed of some number of polygons", column 11, line 29-11) .

7. As per claim 6, Crane demonstrated all the elements as applied to the rejected claim 1, supra, and further discloses the markers to be laid out include markers shared by a plurality of players (Figure 2 84, the game cartridge contains the markers to be shared by all participating players).

8. As per claim 7, Crane demonstrated all the elements as applied to the rejected claim 1, supra, and further discloses the markers have a common color ("each polygon is specified in terms of its color", column 16, line 51-52, where the polygon is of the object).

9. As per claim 10, Ralston discloses a mixed reality apparatus for making a player experience mixed reality by making the player observe a mixed reality space image obtained by mixing real and virtual spaces,

markers serving as position indices being laid out in the real space,
said apparatus comprising:

marker detection means for detecting the markers from image data obtained by sensing the real space from a substantially viewpoint position of the player ("The field of view generally contains real "objects" which are being observed in the environment by the operator", column 9, line 29-31, where the object is the marker); and

mixed reality space image generation means for generating the mixed reality space image to be observed by the player, so the player observes virtual object images that do not include any images of the markers in surrounding regions (marker regions) including markers in the image data ("The field of view generally contains real "objects" which are being observed in the environment by the operator, or may be hidden from sight", column 9, line 29-31).

10. As per 11, Ralston demonstrated all the elements as applied to the rejected claim 10, supra, and further discloses said mixed reality space image generation means substitutes or overlays images of the marker regions by predetermined virtual object images (" ... and is augmented with images of virtual "objects" which are generated by the rendering system and presented on a display 415", column 24-34).

11. As per claim 13, Ralston demonstrated all the elements as applied to the rejected claim 11, supra, and further discloses the predetermined virtual object images are plane patches with the same or similar texture, size, location and posture of the marker regions before the markers are laid out ("Position and attribute information relating to selected real objects in a particular environment is stored in a database 420 which is accessed by the rendering system to generate the corresponding virtual objects", column 9, line 41-45).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crane et al. (6,054,991).

As per claim 9, Crane discloses a computer readable storage medium which stores a marker layout program for laying out markers in a real space as position indices upon presenting a mixed reality space, storing:

a program code of laying out the markers to have a positional relationship that allows a given player not to observe markers to be used by only another player when a plurality of players who observe the mixed reality space within different movable ranges observe the mixed reality space ("The graphical

representation obscures the first and second objects according to the relative position of the first and second objects to a predetermined observation point within the virtual reality environment", column 2, line 10-14, where the objects are the marker).

Since Crane is using processor and memory (Figure 2 76, 80) for his system, it is obvious that he is using the software stored in the hardware to do the method as claimed.

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ralston (6,094,625)

As per claim 12, Ralston demonstrated all the elements as applied to the rejected claim 1, *supra*.

Since Ralston suggested overlay the objects with virtual objects, it would have been obvious to substitutes or overlays an image of a region including all the detected markers by a predetermined virtual object image.

15. Claims 14 and 18-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirota et al. (6,064,749) in view of Crane et al. (6,054,991).

As per claim 14, Hirota et al., hereinafter Hirota, discloses a mixed reality space image generation method for generating a mixed reality space image which makes a player experience mixed reality by mixing a real space in which markers serving as position indices are laid out, and a virtual space, comprising:

the marker detection step of detecting the markers from image data obtained by sensing the real space from a substantially viewpoint position of the player ("Video tracking of landmarks is utilized as the primary method for

determining camera position and orientation", column 3, line 16-18, where the landmark is the marker and the camera is the player position).

It is noted that Hirota does not explicitly disclose the step of generating the mixed reality space image to be observed by the player, so the player observes virtual object images that do not include any images of the markers in surrounding regions (marker regions) including the markers in the image data, however, this is known in the art as taught by Crane. Crane discloses a method of modeling player position where "the graphical representation obscures the first and second objects according to the relative position of the first and second objects to a predetermined observation point within the virtual reality environment", column 2, line 10-14.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of Crane into Hirota in order to make the images look 3-dimensional.

16. As per claim 18, since Hirota's system has processor (Figure 2 76) and memory (80), it is obvious to have the storage medium to store the program as claimed and, therefore, is similarly rejected as claim 14.

17. As per claim 19, since Hirota's system has processor (Figure 2 76) and memory (80), it is obvious to have the storage medium as claimed and, therefore, is similarly rejected as claim 14.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Inquiries

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Ryan Yang** whose telephone number is **(703) 308-6133**.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Michael Razavi**, can be reached at **(703) 305-4713**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231

or faxed to:

(703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to Crystal Park II, 2121
Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

Ryan Yang
May 15, 2002


MICHAEL RAZAVI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600